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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Katsura Hirai

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EXAMINER

ULLAH, ELIAS

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/528,961	Applicant(s) HIRAI, KATSURA	
	Examiner ELIAS ULLAH	Art Unit 2892	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 29-44, 46-51, 75 and 76 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 29-44, 46-51, 75 and 76 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/11/2009, 11/6/2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This office action is in response an amendment filed on 8/11/2009.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 29-30, 36-37, 43-44, 46 and 48-50 and 76 are rejected under 35 U.S.C. 102(e) as being anticipated by Kawamura et al. (Kawamura, Pub. No.: US2003/0068581).

As to claim 29, Kawamura shows a method for manufacturing an electrical circuit (Fig. 2) comprising a step of forming at least a part of the electrical circuit by impregnating [0247-0248] a conductive polymer ([0241 and 0248] wherein a conductive polymer is impregnated the hydrophilic surface i.e. polyvinylpyrrolidone see [0247]) solution in a solvent [0241] or a conductive polymer dispersed liquid in a dispersant, in a receptive layer ([0247] wherein hydrophilic region equals to respective layer) formed on a substrate 20, the conductive polymer exhibiting p-type conduction or n-type conduction [0203-0204 wherein conductive polymer e.g. PEDOT doped with impurities to exhibit either p type or n type], wherein the receptive layer ([0247] wherein hydrophilic

region equals to respective layer) is porous ([0247] wherein polyvinylpyrrolidone is porous see US 20090171406 in [0076] for examiner conclusion).

With regard to claim 30 Kawamura shows after impregnating a solution [0248] or a dispersed liquid containing the conductive polymer in the receptive layer ([0247] wherein hydrophilic region equals to respective layer), forming the part of the electrical circuit by evaporating [0193] (at the temperature of 40-100 degrees solution to evaporate or dry) the solvent of the solution contains the conductive polymer ([0241 and 0248] wherein a conductive polymer is impregnated the hydrophilic surface i.e. polyvinylpyrrolidone see [0247]) or the dispersant of the dispersed liquid contains the conductive layer.

With regard to claims 36-37 Kawamura shows the method for manufacturing the electrical circuit wherein the solution or the dispersed liquid containing the conductive polymer ([0241 and 0248] wherein a conductive polymer is impregnated the hydrophilic surface i.e. polyvinylpyrrolidone see [0247]) is impregnated in the receptive layer ([0247] wherein hydrophilic region equals to respective layer) by ejecting the solution or the dispersed liquid containing the conductive polymer onto the receptive layer by a ink-jet printing method 0224].

With regard to claims 43-44, Kawamura shows an electrical conductivity of conductive polymer is 0.01S/cm or more or 1S/cm or more [0239].

With regard to claim 46, Kawamura shows the receptive layer ([0247] wherein hydrophilic region equals to respective layer) contains inorganic particles (see [0246 wherein respective layer is comprises by inorganic particle e.g. metal ion]).

With regard to claims 48-49, Kawamura shows the average particle diameter of the inorganic particles is .003 to .2 um [0220].

With regard to claims 50 and 76, Kawamura teaches a method for manufacturing an electrical circuit (Fig. 2) comprising a step of forming at least a part of the electrical circuit by impregnating [0247-0248] a conductive polymer ([0241 and 0248] wherein a conductive polymer is impregnated the hydrophilic surface i.e. polyvinylpyrrolidone see [0247]) solution in a solvent [0241] or a conductive polymer dispersed liquid in a dispersant, in a receptive layer ([0247] wherein hydrophilic region equals to respective layer) formed on a substrate 20, the conductive polymer exhibiting p-type conduction or n-type conduction [0203-0204 wherein conductive polymer e.g. PEDOT doped with impurities to exhibit either p type or n type] and a hydrophilic binder [0292] and a weight ratio of the inorganic particles ([0262] wherein sodium acetate salt is inorganic particles) to the hydrophilic binder ([0262] wherein graft polymerization layer is a hydrophilic binder see also [0241] is between 2:1 e.g. 67.7% and 20:1 e.g. 95% ([0262] wherein weight of polymerization is at least 90 % and inorganic particles is 10%).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 31-33, 38-39 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawamura et al. (Kawamura, Pub. No.: US2003/0068581).

With regard to claims 31-33, Kawamura fails to teach specific ratio of water concentration the solvent of the solution containing the conductive polymer or the dispersant of the dispersed liquid containing the conductive polymer contains 30% or more of water and 5 to 70 % by weight of water soluble organic solvent and 10 to 30 % by weight of a water soluble organic solvent.

However, Kawamura teaches an arbitrary ratio of water in the solvent [0163]. Accordingly, it would have been obvious to one of ordinary skill in art to use teaching Kawamura in the range as claimed, because it has been held that where the general conditions of the claims are disclosed in the prior art, it is not inventive to discover the optimum or workable range by routine experimentation. MPEP 2144.05.

With regard to claims 38-39, Kawamura teaches a general controllability of ejecting conductive polymer ([0241 and 0248] wherein a conductive polymer is impregnated the hydrophilic surface i.e. polyvinylpyrrolidone see [0247]), but fails to teach wherein an amount of the conductive polymer impregnated in the receptive layer is controlled by controlling an amount of the ejected conductive polymer per unit area. However, it is typical to control conductive polymer in the ink jet method by per unit area.

With regard to claim 51, Kawamura teaches the substrate 20 but fails to teach expressly the substrate is a polymer. However it is typical in the art a substrate can be made of polymer.

5. Claims 34-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawamura et al. (Kawamura, Pub.: US2003/0068581) in view of Kim et al. (Kim, 2003/0099874) of record.

With regard to claims 34-35, Kawamura fails to teach the solution liquid containing the conductive polymer has .001 to 1% by weight of a surfactant and the surfactant is a non-ionic surfactant.

However, Kawamura teaches the solution liquid containing the conductive polymer has .001 to 1% by weight of a surfactant [0040] and the surfactant is a non-ionic surfactant [0040]. At the time the invention was made; it would have been obvious to a person having ordinary skill in the art to use the solution liquid containing the conductive polymer has .001 to 1% by weight of a surfactant and the surfactant is a non-ionic surfactant teaching of Kim in the method for manufacturing an electrical circuit of Kawamura because a conductive polymer contain surfactant enable emulsion formation for polymer electrolyte.

6. Claims 40-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawamura et al. (Kawamura, Pub.: US2003/0068581) in view of Hannah (Hannah, US 6,767,731) of record.

With regard to claims 40-42, Kawamura teaches polymer contains a dopant [0203-0204].

But Kawamura fails to teach the conductive polymer is oligomer having a repeat number of 4 to 19 or a polymer a repeat number of 20 or more; and conductive polymer has a repeat unit of thiophene, vinylene or a substitute compound thereof.

However, Hannah teaches the conductive polymer is oligomer having a repeat number of 4 to 19 or a polymer a repeat number of 20 or more; and conductive polymer has a repeat unit of thiophene, vinylene or a substitute compound thereof (col. 9, lines 14-29). At the time the invention was made, it would have been obvious to a person having ordinary skill in the art to use “the conductive polymer having a different repeat number and repeat unit” teaching of Hannah in the method for manufacturing an electrical circuit of Kawamura, because a conductive polymer with repeat number and unit are able to make alternating bonds and an alternating bonds provides a pathway for free electron charge carriers for a electronic circuit as taught by Hannah in (col. 9, lines 14-29).

7. Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawamura et al. (Kawamura, Pub.: US2003/0068581) in view of Namiki (Namiki, US 5,641,559) of record.

Kawamura fails to teach the inorganic particles silica particles prepared by a vapor deposition.

However, Namiki teaches silica particles prepared by a vapor deposition method (col. 4, lines 16-21). At the time the invention was made, it would have been obvious to a person having ordinary skill in the art to use “inorganic particles prepared by a vapor deposition” teaching of Namiki in the method for manufacturing an electrical circuit of Kawamura, because prepared inorganic particles by vapor deposition is a conventional method of preparing a inorganic particles for a electronic circuit as taught by Namiki in (col. 4, lines 14-45).

8. Claim 75 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawamura et al. (Kawamura, Pub.: US2003/0068581) of record in view of Kurihara et al. (Kurihara, US 6,340,443).

With regard to claim 75, Kawamura et al. teaches a method for manufacturing an electrical circuit (Fig. 2) comprising a step of forming at least a part of the electrical circuit by impregnating [0247-0248] a conductive polymer ([0241 and 0248] wherein a conductive polymer is impregnated the hydrophilic surface i.e. polyvinylpyrrolidone see [0247]) solution in a solvent [0241] or a conductive polymer dispersed liquid in a dispersant, in a receptive layer ([0247] wherein hydrophilic region equals to respective layer) formed on a substrate 20, the conductive polymer exhibiting p-type conduction or n-type conduction [0203-0204 wherein conductive polymer e.g. PEDOT doped with impurities to exhibit either p type or n type], wherein the receptive layer ([0247] wherein hydrophilic region equals to respective layer) is porous ([0247] wherein polyvinylpyrrolidone is porous see US 20090171406 in [0076] for examiner conclusion)

Kawamura fails to teach the inorganic particles consisting of colloidal silica particles.

However, Kurihara teaches inorganic particles consisting of colloidal silica particles (col. 4, lines 45-60). At the time the invention was made, it would have been obvious to a person having ordinary skill in the art to use “inorganic particles consisting of colloidal silica” teaching of Kurihara in the method for manufacturing an electrical circuit of Kawamura, because colloidal silica is typical inorganic particles to add to polyester e.g. a respective layer as taught by Kurihara in col.4, lines 45-60.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELIAS ULLAH whose telephone number is (571)272-1415. The examiner can normally be reached on weekdays, between 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thao Le can be reached on (571) 272-1708. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Elias Ullah/
Examiner, Art Unit 2892

/Thao X Le/
Supervisory Patent Examiner, Art
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